

# A Taxonomic Study on the Genus *Dicentrius* from Japan (Coleoptera, Staphylinidae, Pselaphinae) Part 1, The Tsushima and Gotô Islands

By

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野村周平\*：日本産アラメヒゲナガアリヅカムシ属（コウチュウ目，ハネカクシ科，アリヅカムシ亜科）の分類学的研究．第1部 対馬および五島

## Introduction

The genus *Dicentrius* REITTER belongs to the tribe Pselaphini, and was previously known under the name *Pselaphogenius* REITTER for a long time. Many species of this genus are distributed in the Palearctic Region. In East Asia, this group of beetles commonly inhabit forest litter.

In Japan, SHARP (1883) first described *Pselaphus debilis* from Nagasaki, Kyushu. BESUCHET (1961) revised and classified it into *Pselaphogenius* and newly described *P.orientalis* from Yamanaka, Mishima City, central Honshu. K. SAWADA (1969) added nine new species and five new subspecies from all over Japan with detailed descriptions of their genitalic structure of both the sexes. Additionally, he described *P. magniocularis* from Yamaguchi Pref., western Honshu in 1971.

From northern Honshu, TANOKUCHI (1981) described *P. uncifer*, distribution of which was reviewed by NOMURA (1996 b) in comparison with the related species, *D. tridentatus tridentatus* (K. SAWADA). Up to the present, thirteen species and five subspecies have been known from Japan, though many species are undescribed yet.

In this genus, little variation is found in the habitus of many species, though they are clearly classified by structure of the male genitalia. They seem to become remarkably diversified in genitalic structure in Japan by way of geographic isolation, which must be related to the loss of hind wings. In fact, all the known species of this genus are wingless. NOMURA (1989 b, 1996 a) reported variation of the male genitalia and the distributional pattern of the *Dicentrius* species in western Kyushu.

As the first part of my study on the Japanese *Dicentrius*, three species from the Tsushima and the Gotô Islands off northwestern Kyushu are taken up. Geographical variation occurring in *D. tubipenis* K. SAWADA from the Tsushima Islands is noticed for the first time. A new species collected from Nakadôri Is. of the Gotô Islands is described.

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### Materials and methods

Much of the materials were extracted from forest litter by using Tullgren funnel. They were fixed and preserved in 70% ethanol and were dissected for examination of the male and female genitalic structures. The male and female genital segments were boiled in 10% KOH solution, and mounted with Canada balsam after dehydration with 99% ethanol.

Body length shown below is represented by the total of the cephalic, pronotal, elytral and abdominal lengths. The head length is measured from the anterior margin of the frons to occipital constriction, and the abdominal length is from the basal to apical margins of the fourth tergite, because the remaining parts are variable in length with condition of material, for example, wet, dry, teneral or mature. Therefore, the measurements in the present study may be different from the other authors', for example, those by K. SAWADA (1969).

Terminology of female genital segments adopted in the present study is different from that of K. SAWADA (1969). "Ninth sternite" used in this study is the same as "sternal sclerite of genitalia" in K. SAWADA (1969) and "genital plate" in this study is called "tergal sclerite" by K. SAWADA. In general structure of pselaphine beetles, vaginal opening is located between the apical and basal sclerites of the ninth sternite or at the base of the ninth sternite. The genital plate is the sclerotization of the basal part of vagina, which is usually represented by a T-shaped small sclerite at the internal side of the ninth sternite in many groups of the Pselaphinae. This organ is probably homologous with "*pièce papilionacée*" or "*plaque vaginale (apophyse vaginale)*" named by JEANNEL (1941, 1949) in the Adephaga as referred to in NOMURA (1991), and with "ligular sclerite (*apophyse ligulaire*)" defined by DEUVE (1993). In conclusion, this plate is apart from the tergal region, and cannot be regarded as a tergal element.

### Genus *Dicentrius* REITTER

[Japanese name : Arame-higenaga-arizukamushi zoku]

*Dicentrius* REITTER, 1882, Verh. naturf. Ver. Brünn, 20 : 208. Type species : *Pselaphus merklia* REITTER, by monotypy. (See NOMURA & LEE, 1992 for synonymy)

Body strongly narrowed anteriorly, broadened posteriorly in elytra and abdomen, covered with fine reticulation on dorsal surface. Elytra fused with each other along median line, strongly narrowed anteriorly, each elytron with 2 basal foveae and a broad longitudinal carina between the basal foveae, fringed with large scales along posterior margin (Fig. 1 A). Fourth abdominal tergite very broad, deeply concave at base, covered with large scales along the transverse basal concavity (Fig. 1 B), weakly convex in posterior part.

Aedeagus asymmetrical in many cases, consisting of a pair of complete parameres, median lobe and well sclerotized endophallus ; parameres each elongate and strap-like ; median lobe oblong in dorsal view, with basal nodule including basal foramen, ovoid membranous part on dorsal side, a long ventral process on ventral side and apical armatures around apical orifice.

Female genital segments represented by 9th sternite and genital plate ; 9th sternite consisting of lamellar apical lobe and an X-shaped, or a pair of, basal sclerite(s) ; genital plate attached to basal sclerite(s) of 9th sternite, generally T-shaped in ventral view, though almost membranous in some cases.

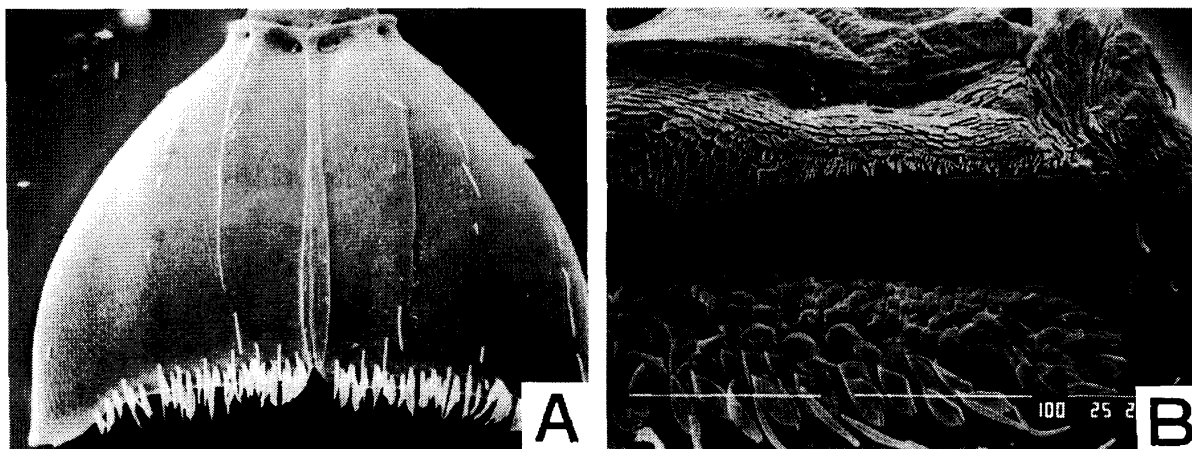


Fig. 1. *Dicentrius tubipenis* K. SAWADA. A: elytra; B: 3rd to 4th abdominal tergites.

*Remarks.* The genus *Dicentrius* is separated from the other genera of the tribe Pselaphini by having strongly narrowed and fused elytra each with two basal foveae and a longitudinal carina between the basal foveae.

***Dicentrius tubipenis* (K. SAWADA)**

[Japanese name: Tsushima-higenaga-arizukamushi]

(Figs. 1, 2 A-H)

*Pselaphogenius tubipenis* K. SAWADA, 1969; Kontyû, Tokyo, 37: 14; NOMURA, 1989, Check List Jpn. Ins., Fukuoka, 1: 292; NOMURA, 1989, Nagasakiken-no-seibutsu, Nagasaki, 186.

*Dicentrius tubipenis*: NOMURA, 1995, Koganemushi, Nagasaki, (57): 33.

*Male.* Length 1.60–1.76 mm. Width 0.65–0.69 mm.

*Female.* Length 1.60–1.66 mm. Width 0.69–0.74 mm. Ninth sternite (Fig. 2 H) weakly sclerotized, transverse and lamellar, with a pair of short and slender basilateral arms.

*Geographical variation.* In the specimens from Mt. Mitake (Figs. 2 A, B), median lobe of aedeagus small-sized, parameres extending over the apex of median lobe, endophallus reverse S-curved in dorsal view, sharply projected rightwards and apically; in those from Mt. Shiratake (Figs. 2 C, D), median lobe large-sized, paramere lying on the same level as median lobe at apices, endophallus larger than in the Mitake ones, S-curved in dorsal view, sharply projected leftwards at apex; in the specimens from Izuhara (Fig. 2 G), Kamizaka (Figs. 2 E, F) and Himi, median lobe middle-sized, parameres extending over the apex of median lobe, endophallus curved rightwards near apex, broadened and rounded at apex.

*Specimens examined.* [Tsushima Isls.] 3♂, Mt. Mitake, Kamitsushima-chô, 19. x. 1983, S. NOMURA leg.; 1♀, same locality as above, 20. x. 1983, K. OGATA leg.; 7♂10♀, same locality as above, 31. v. 1988, S. NOMURA leg.; 5♂1♀, same locality as above, 4. v. 1990, S. NOMURA leg.; 4♂5♀, same locality as above, 28. iv. 1992, S. NOMURA leg.; 1♂, Mehoro, Kamiagata-chô, 20. x. 1983, S. NOMURA leg.; 2♂2♀, Mt. Shiratake, Mitsushima-chô, 18. x. 1983, S. NOMURA leg.; 3 exs., Shiratake-Sumo, Mitsushima-chô, 1. iii. 1970, H. MAKIHARA leg.; 2 exs., Kamizaka, Izuhara-

chô, 27. ii. 1970, H. MAKIHARA leg. ; 22 ♂9 ♀, sama locality as above, 27. iv. 1992, S. NOMURA leg. ; 3 ♂3 ♀, Himi, Izuhara-chô, 6. v. 1990, S. NOMURA leg. ; 27 exs., Hachiman-jinja, Izuhara-chô, 20. x. 1983, S. NOMURA leg. ; 2 ♂, same locality as above, 3. vi. 1988, S. NOMURA leg. ; 2 exs., Banshō-in, Izuhara-chô, 1. iii. 1970, H. MAKIHARA leg. ; 1 ex., "Tsushima", Nagasaki Pref., -. iii. 1970, H. MAKIHARA leg.

*Distribution.* Tsushima Isls.

*Remarks.* This species is very characteristic for its almost symmetrical median lobe and parameres, which are considered an ancestral state in this genus. A striking geographical variation occurs in the size of median lobe and the shape of endophallus as shown above. After the original description by K. SAWADA (1969), the form occurring in the type locality, Mt. Ariake (shown by white circle in Fig. 3) seems to belong to the group of Izuhara, Kamizaka and Himi.

***Dicentrius gotoinsularis* sp. nov.**

[Japanese name : Gotô-higenaga-arizukamushi]

(Figs. 2 I-M)

*Male.* Length 1.35–1.49 mm, width 0.55–0.60 mm. Body reddish brown to dark brown, maxillary palpi and tarsi light brown, depressed dorso-ventrally, strongly narrowed anteriorly.

Head longer than wide, gently narrowed anteriorly, covered with coarse reticulation on dorsal surface ; clypeus very short, invisible in dorsal view, frons narrowed and strongly convex, with a pair of well-projected antennal nodules and a median notch between the nodules ; vertex flattened on dorsal side, with 4 shallow and broad sulci, namely, median sulcus running from median notch to the middle of dorsal tentorial pits, each lateral sulcus from base of antennal nodule to dorsal tentorial pit and a short postero-median sulcus from the middle of dorsal tentorial pits to the middle of occipital constriction ; postgenae very broad, gently rounded behind eyes. Eyes very small, each ovoid in lateral view, composed of 7 to 8 facets. Antennae long and slender, reaching hind margin of prothorax, 1 st segment elongate, thick and subcylindrical, 2 nd thick and ovoid, 3 rd to 8 th subequal in width, each nearly ovoid, weakly thickened distad, 9 th to 10 th subequal, each larger than 9 th, ovoid, 11 th largest and ovoid ; relative length (width) of each segment from base to apex : 1.7 (0.8) : 0.8 (0.6) : 0.7 (0.5) : 0.7 (0.5) : 0.7 (0.5) : 0.7 (0.5) : 0.8 (0.5) : 0.7 (0.5) : 1.0 (0.7) : 1.0 (0.7) : 2.0 (1.1). Maxillary palpi very long and slender, slightly shorter than antenna, 1 st segment very elongate, reaching below eyes, arcuately bent in basal 2/3, 2 nd about 1.5 times as long as 1 st, as wide as 1 st at base, then, thickened distally in apical 2/5, 3 rd short and ovoid, as wide as apex of 2 nd, 4 th the largest, about as long as 1 st + 2 nd + 3 rd, as wide as 3 rd at base, then narrowed at middle part, strongly thickened in apical 1/3, slightly narrowed and notched at apex, with 2 long apical setae.

Pronotum slightly longer than wide, round-sided, covered with sparse pubescence and weak reticulation on dorsal surface, with a pair of small lateral foveae at basal 1/3, a pair of shallow lateral longitudinal sulci each running from lateral fovea to anterior margin, a very weak median antebasal fovea at basal 1/5, and a very weak transverse sulcus at basal 1/10. Elytra longer than pronotum, nearly trapezoidal, strongly narrowed basad, weakly convex and covered with weak reticulation on dorsal surface, humeri completely obliterated, each elytron with an adsutural and a lateral longitudinal carinae, and 2 basal foveae. Metasternum very broad, roundly convex and smooth, sparsely covered

with pubescence. Legs short but slender.

Abdomen slightly wider than elytra, 4th tergite predominantly large, nearly trapezoidal, weakly broadened posteriad, very weakly convex, smooth and sparsely pubescent on dorsal surface, with a basal transverse groove and a pair of large paratergites; transverse groove densely covered with scales and hidged by hind margin of elytra, 5th to 6th subequal in length, each very short, 7th slightly longer than 6th, short, 8th small, transverse and semicircular, flattened on dorsal side.

Aedeagus (Figs. 2 I–L) asymmetrical; parameres long, slender, right paramere longer than the left, slightly over the apex of ventral process, very weakly broadened distad, with 4 to 5 very short setae at apex, left similar to right in shape; median lobe rounded at base, slightly narrowed apicad in

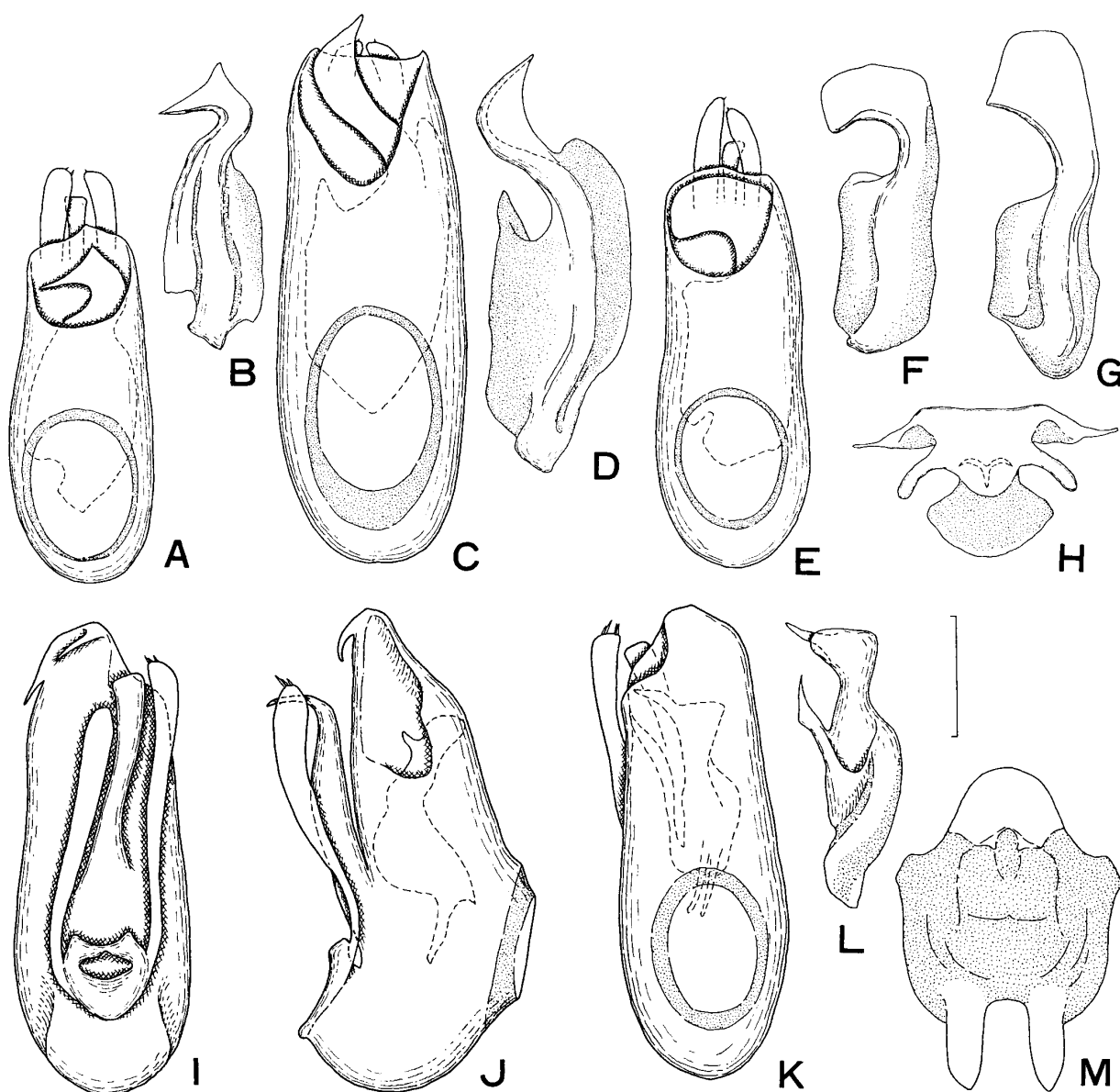


Fig. 2. *Dicentrius tubipenis* K. SAWADA and *D. gotoinsularis* sp. nov. A-B: *D. tubipenis* from Mt. Mitake; C-D: ditto, from Mt. Shiratake; E-F, ditto, from Kamizaka; G-H: ditto, from Hachiman Shrine, Izuhara-chô; I-M: *D. gotoinsularis*. A, C, E, K: aedeagus in dorsal view; I: ditto, in ventral view; J: ditto, in lateral view; B, D, F, G, L: endophallus; H, M: female 9th sternite and genital plate. Scale: 0.1 mm.

dorsal view, with a slender spine at ventral side of the apex, and a short and acute spine at left side, basal nodule gently projected, ventral process elongate and slender, very slightly broadened distad, strongly bent ventrad near apex, apical orifice broad, opening at the right lateral side of the apex ; endophallus broad and well sclerotized, weakly constricted near the middle, apical part strongly thickened distad, with a bold spine extending rightwards, basal part broad, partly membranous, complicated in shape.

*Female*. Length 1.38–1.48 mm, width 0.59–0.60 mm. Very similar to male, but the apical abdominal segments rounded on ventral side, 8 th tergite longer than in male, nearly triangular, 9 th sternite (Fig. 2 M) nearly semicircular, connected with genital plate by membrane, genital plate almost membranous, with a pair of lingulate sclerites at base.

Holotype ♂, Mt. Bandake, Shin-Uonome-chô, Nakadôrijima Is., Gotô Isls., Nagasaki Pref., 29. vi. 1996, S. NOMURA leg. Paratypes. 2 ♂9 ♀, same data as holotype ; 1 ♂, Mt. Sannôzan, Nakadôrijima Is., Gotô Isls., Nagasaki Pref., 26. x. 1993, S. IMASAKA leg.

*Distribution*. Gotô Isls. (Nakadôri Is.).

*Remarks*. This new species is most closely allied to *D. tubipenis* (K. SAWADA) in view of the nearly symmetrical parameres and the shape of the endophallus, though it is clearly separated by the distinctly asymmetrical apical part of the aedeagus.

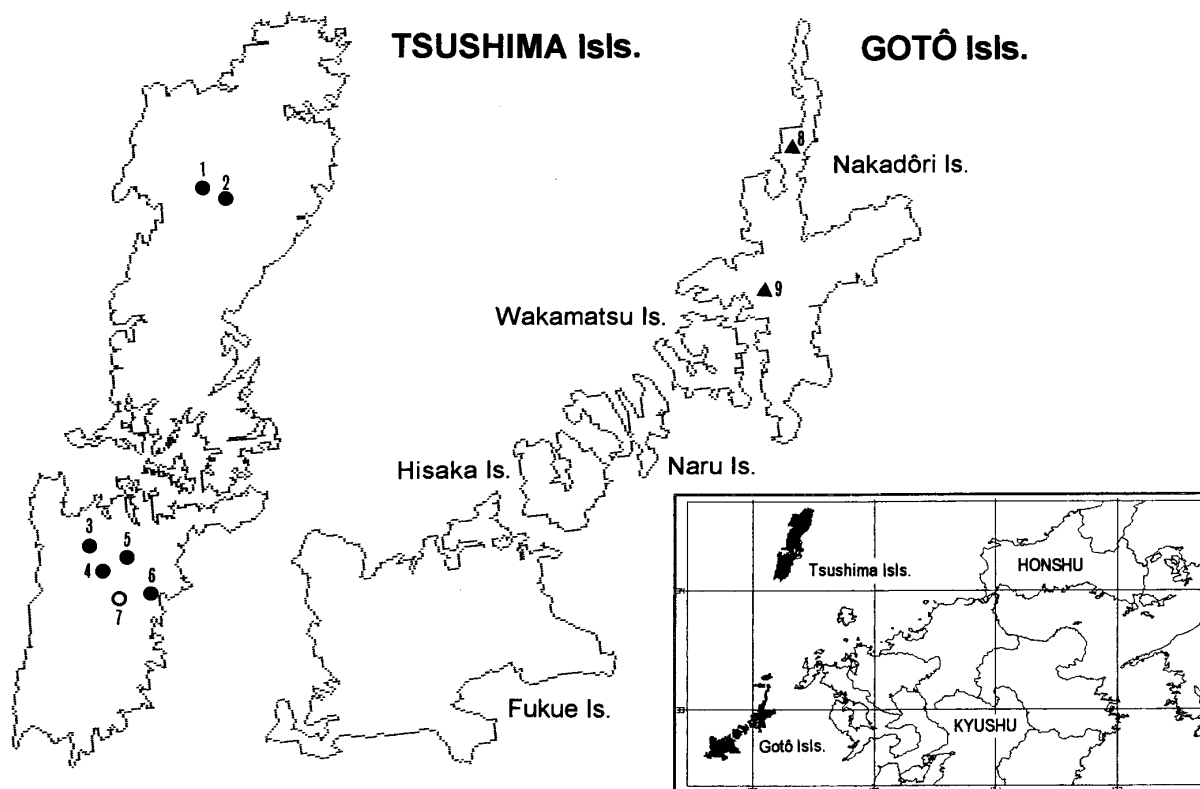


Fig. 3. Distribution map of *Dicentrius* spp. Black circles indicate the collecting sites of *D. tubipenis* K. SAWADA : 1, Mt. Mitake, 2, Mehoro, 3, Mt. Shiratake (Sumo-Shiratake may be the same), 4, Himi, 5, Kami-zaka, 6, Hachiman Shrine and Banshō-in, Izuhara-chō ; white circle indicates the type locality of *D. tubipenis* : 7, Mt. Ariake ; black triangles indicate the sites of *D. gotoinsularis* sp. nov. : 8, Mt. Bandake, 9, Mt. Sannôzan.

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### 要 約

日本産アラメヒゲナガアリヅカムシ属 *Dicentrius* に関する分類学的研究の第1部として、対馬から知られる、ツシマヒゲナガアリヅカムシ（和名新称）*D. tubipenis* K. SAWADA の再検討を行ない、雄交尾器中央片のサイズや内部骨片の形状に、地域によって著しい変異があることを明らかにした。また、五島列島中通島から1新種、*gotoinsularis* を記載した。

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